

UNCLASSIFIED

Defense Technical Information Center Compilation Part Notice

ADP010353

TITLE: Personality Hardiness as a Predictor of
Officer Cadet Leadership Performance

DISTRIBUTION: Approved for public release, distribution unlimited

This paper is part of the following report:

TITLE: Officer Selection [la Selection des
officiers]

To order the complete compilation report, use: ADA387133

The component part is provided here to allow users access to individually authored sections of proceedings, annals, symposia, ect. However, the component should be considered within the context of the overall compilation report and not as a stand-alone technical report.

The following component part numbers comprise the compilation report:

ADP010347 thru ADP010377

UNCLASSIFIED

Personality Hardiness as a Predictor of Officer Cadet Leadership Performance ¹

P.T. BARTONE

Lieutenant Colonel, U.S. Army
Department of Behavioral Sciences and Leadership
United States Military Academy
600 Thayer Road, West Point, NY 10996-9902, USA

Summary: Future military officers must be highly resilient, resourceful, and quick to adjust in rapidly changing situations. In view of this, the time may be now to reconsider the role of normal personality traits that might influence leader performance. A promising personality dimension in this regard is known as "hardiness". High hardy persons have a strong sense of life and work commitment, a greater belief of control, and more openness to change and challenges in life. The present study examined one class of United States Military Academy cadets over time, testing the power of hardiness and several additional cognitive and personality variables to predict military leadership performance over a four-year period. In regression models predicting Military Development (MD) grades for each of four college years, as well as cumulative MD grades over four years, hardiness proved a strong and consistent predictor of military development grades for these officer cadets. It appears that hardiness -- this pervasive and steady sense of commitment, control, and challenge -- facilitates adaptation and performance in the highly stressful world of West Point Army officer cadets. Evidence from this study suggests that personality hardiness is advantageous for young and future U.S. Army officers. These findings have implications for officer selection and training.

Introduction: In the selection and training of military officers, little attention has been paid to normal personality characteristics. In part this is due to a common confounding of personality with psychopathology. When measures of psychopathology (for example, the Minnesota Multiphasic Personality Inventory, MMPI) have shown little predictive utility beyond initial screening, many investigators have wrongly concluded that personality is not a good predictor of performance in military personnel. But there is an important set of "normal" personality characteristics that goes beyond psychopathology: common traits or tendencies on which people differ, but which have nothing directly

to do with sickness or maladaptation. The familiar dimensions of extraversion, openness, and conscientiousness provide examples. People can be high or low on these dimensions, without being pathological or maladapted in any way.

Considering some of the special demands and adaptational challenges that future military officers and leaders will likely face, it is time to seriously reconsider the role of normal personality traits that might influence leader performance. If personality characteristics can be identified that confer adaptational and performance advantages for military leaders, this knowledge could be very useful in building more effective selection and training programs. One characteristic of particular promise in this regard is personality "hardiness". Conceptually, hardiness is a personality dimension that develops early in life and is reasonably stable over time, though amenable to change and probably trainable under certain conditions (Kobasa, 1979; Maddi & Kobasa, 1984). Hardy persons have a high sense of life and work commitment, a greater feeling of control, and are more open to change and challenges in life. They tend to interpret stressful and painful experiences as a normal aspect of existence, part of life that is overall interesting and worthwhile. Research studies with a variety of occupational groups have found this dimension of hardiness appears to function as a significant moderator or buffer of stress (e.g., Bartone, 1989; Contrada, 1989; Kobasa, Maddi & Kahn, 1982; Roth et. al, 1989; Wiebe, 1991). In military groups, hardiness has also been identified as a significant moderator of combat exposure stress in U.S. Gulf War soldiers (Bartone, 1993; 1999).

Selecting good future leaders, and then developing them are important tasks for military organizations. The present study examines one class of United States Military Academy cadets over time, testing the power of several cognitive and personality variables

¹ Paper presented at the International Military Testing Association Meeting and NATO Research & Technology Agency Workshop on Officer Selection, 9-11 November 1999, Monterey, California. Portions of this report were presented at the May, 1999 meeting of the International Applied Military Psychology Symposium (Bartone & Snook, 1999).

to predict military leadership performance across four years of training experience.

Method: A single class of U.S. Military Academy - West Point students (N=1143) was studied over time, from arrival in spring of 1994 until graduation four years later. Extensive measures were collected on this cohort, including personal background and biographical data, cognitive abilities and problem solving, personality, values, and leadership style (Tremble, 1997; Evans, 1997). Also, at the end of each semester and summer training period a number of leadership performance indicators were extracted from the Academy archival files and added to the database. To assess personality hardness, a short (15-item) scale was administered in the spring of 1998. Of approximately 864 administered, 435 completed surveys were returned for an excellent response rate of slightly better than 50%.

Instruments: Of several leadership indicators available on cadets, the most important and comprehensive is the "Military Development Grade" (MD). This is a performance score or grade assigned to cadets at the end of each semester and summer training period, and is a weighted average of performance ratings by 2-3 key supervisors (U.S. Corps of Cadets, 1995). Fifty percent of the MD grade is given by the Tactical Officer in charge of the cadet, with the remaining 50% coming from cadet supervisors. Thus, the MD grade represents a weighted average of several supervisors' ratings on military performance and leadership. For the present study, an average Military Development score was computed for each of the four college years, and a final one representing grades across all four years (MD grades for summer training cycles were treated separately for various reasons). Military Development grades assigned during the academic semesters reflect leadership and military performance over a substantial period of time, within the daily school and training "garrison" environment. As cadets progress up the class structure from freshman to seniors, they are given increased leadership responsibilities and opportunities. Thus, Military Development grades are more related to actual leadership performance for the upper classes, compared to the lower classes where appearance and performance of military tasks are more germane. (For more on the nature of Military Development grades at West Point, see Celebioglu, 1999).

Cognitive measures that were included as predictors:

1. Mental Rotation Test. Respondents must correctly identify geometric figures when rotated, as viewed on

a printed page (20 items; Mumford et al., 1993). High scores reflect good spatial abilities.

2. Logical Reasoning Test. Respondents read a series of mutually dependent statements, and then answer True or False to a set of statements that might logically follow (30 items, after Mumford et al., 1993). High scores reflect good logical reasoning skills.

3. Social Judgement. This measure is based on the Mumford et al (1993) executive leadership model that defines leadership as "discretionary social problem solving in ill-defined domains". Respondents are presented with two "organizational scenarios", and asked to answer 3 open-ended questions about it (see Appendix A). Answers are scored on a 1 (Not at All) to 6 (To a very large extent) scale for: **self-objectivity** (knowing one's strengths and weaknesses and able to work with or around them); **self-reflectivity** (introspective, intuitive, good understanding of self based on past experience; learns from experience and past mistakes); **sensitivity to fit** (knows what will work and what won't in a given situation, driven more by affect than knowledge); **systems perception** (good understanding of others in social systems, sensitive to social needs, goals, demands at multiple levels in social systems); **good judgement under uncertain conditions** (ability to make good decisions under ambiguous conditions, and take appropriate action); **systems commitment** (recognition of one's and others' roles in broader social systems, pursues socially constructive goals); and **overall wisdom** (overall how wise is the response to this scenario?). Scores on these 7 dimensions are averaged for a total Social Judgement score.

4. Problem Solving. Also based on the model by Mumford et al (1993), but elaborated by Tremble et. al. (1997), respondents answer 3 open ended questions about each of two military scenarios. Answers are scored on a 1 (low) to 5 (high) scale for the following 8 dimensions: **short vs long-term implications**; **attention to restrictions**; **nature of goals-self**; **nature of goals-organization**; **quality**; **objectivity**; **number of alternatives**; and **originality**. Scores on these 8 dimensions are averaged for a total Problem Solving score. All cognitive measures were administered in the summer of the freshman year (1994). Some additional background information on the Problem Solving measure is available in Dela Rosa et. al., 1997.

5. College Entrance Equivalency Rating (CEER), represents SAT or ACT college entrance examination scores, on a standardized scale.

Personality measures that were included as predictors:

1. Hardiness. Conceptually, hardiness is a personality variable that develops early in life and is reasonably stable over time, though amenable to change under certain conditions (Kobasa, 1979; Maddi & Kobasa, 1984). Hardy persons have a high sense of life and work commitment, a greater feeling of control, and are more open to change and challenges in life. They tend to interpret stressful and painful experiences as a normal aspect of existence, part of life that is overall interesting and worthwhile. Research studies with a variety of occupational groups have found this dimension of hardiness appears to function as a significant moderator or buffer of stress (e.g., Bartone, 1989; Contrada, 1989; Kobasa, Maddi & Kahn, 1982; Roth et. al, 1989; Wiebe, 1991). In military groups, hardiness has also been identified as a significant moderator of combat exposure stress in US Gulf War soldiers (Bartone, 1993). To measure hardiness, this study used a 15-item scale that improves over earlier instruments, including both positively and negatively keyed items, and covering the three important hardiness facets of commitment, control and challenge (Bartone et al, 1989; Bartone, 1995). Cronbach's alpha coefficient for the total measure is .70 in the present sample. In a sample of 105 (West Point) college students, the three-week test-retest reliability coefficient is .78. The short hardiness scale was administered to this cohort during spring of their senior year (Bartone, 1998), with a response rate of 50% (N=435).

2. **Assessment of Background and Life Experiences (ABLE)**. Developed by the Army Research Institute, the short form yields scores on six scales: **Dominance, Energy Level, Work Orientation, Emotional Stability, Traditional Values, and Social Desirability** (Mael & Schwartz, 1991). Using existing data from admissions surveys, Evans (1997) created empirically-based analog measures for these six ABLE scales. It is these analog ABLE scales that were used in the present study.

3. **NEO-PI**. Using the same empirical procedures, Evans (1997) created analog scores corresponding to the so-called "Big Five" personality dimensions as measured by the NEO Personality Instrument (Costa & McCrae, 1985). The analog instrument yields scores on the following scales: **Neuroticism, Extraversion, Openness, Conscientiousness, and Agreeableness**. The survey responses used to

generate the ABLE and NEO scores were collected shortly after entry to West Point in June 1994.

All 17 predictor variables were entered into regression models predicting in turn freshman, sophomore, junior and senior Military Development grades, and total MD grade averaged across all academic semesters. The regression method applied is "backward elimination", a stepwise procedure that eliminates the weakest variables in turn and recomputes the regression equation after each elimination. This iterative procedure continues until only statistically significant predictor variables remain in the model.

Results: Multiple regression procedures revealed several models that successfully predict Military Development (MD) grades for each of four college years, as well as total cumulative averages on Military Development. A model predicting cumulative MD across four years (Multiple R = .25, F (7,1135) = 11.08, $p < .001$) includes as significant predictors the mental abilities indicator of College Entrance Examination scores, and the personality dimensions Hardiness, Traditional Values, Dominance, Emotional Stability(-), and Work Orientation. These regression results are summarized in Table 1.

TABLE 1
Leadership (MD) predictors, West Point, 4 Years Total

Predictor	Beta	T	p <
College Entrance Exam	.12	4.1	.000
Hardiness	.10	3.4	.01
Social Judgement	.09	3.1	.01
Traditional Values	.09	2.6	.01
Dominance	.08	2.6	.01
Emotional Stability	-.07	-2.1	.03
Work Orientation	.07	2.0	.05

Multiple Regression with backward elimination,
mean substitution for missing data

Model: F(7, 1135) = 11.08, $p < .0001$

Multiple R = .25

R Square = .06

An additional significant predictor is Social Judgement, which appears to lie somewhere between cognition and personality. Regression models predicting military leadership performance separately for the four academic years show a similar pattern of both cognitive and personality variables as significant, with some indication that emotional intelligence (hardiness, emotional stability(-), social

judgement) and logical reasoning take on greater importance for upperclassmen.

Discussion: These results form a coherent picture of factors influencing leader development over time, and lend support to an integrated model of cognitive, emotional and personality variables influencing leader development and performance. While all the tested models leave considerable variance unaccounted for in officer cadet military performance, the personality variables consistently show a level of explanatory power that equals or exceeds that of traditional cognitive variables. Further, personality hardiness emerges as the strongest and most consistent predictor of military development grades for these officer cadets. It appears that hardiness -- a characteristic sense of commitment, control, and challenge -- facilitates adaptation and performance in the rather stressful world of West Point Army officer cadets. Evidence from this study thus confirms that personality hardiness is advantageous for future Army officers.

A somewhat surprising finding is that emotional stability emerges as a *negative* predictor of leadership grades for seniors, and with respect to grades averaged over all four years. To understand this, it must first be recognized that we are dealing with an unusually health group, already screened before entry for physical, academic, and social health and fitness. All successful candidates are thus already reasonably well-adjusted in psychological terms. Among this well-adjusted group, those who score low on "emotional stability" may be those who are more self-aware and reflective, as well as honest and self-assured enough to admit they sometimes felt depressed or overwhelmed during the past year (items on the emotional intelligence scale). This interpretation also fits well with the hardiness theoretical background, which is rooted in existential psychology (Maddi, 1967; Keen, 1970) idea of the "authentic person", who accepts life in all its dimensions, pain and disappointments as well as happiness. From this perspective, the hardy, authentic person will be one who is more open and self-aware, as well as more aware of the social world. These are key features of what has recently been described as "emotional intelligence" (Goleman, 1995; Salovey & Mayer, 1990).

Additional work is needed to evaluate the potential value of hardiness for commissioned Army officers functioning as leaders in actual military operations. Should hardiness prove valuable there as well, results can be applied to help shape and improve leader development programs across organizational levels. Future work in this area should

also seek to expand the predictive model to include additional predictors, such as personal background as well as situational and contextual variables that might influence leader development directly, or in interaction with other variables such as hardiness. In this regard, an interesting issue would be to explore the possible link of hardiness to recognized leadership styles or traits, such as charismatic or transformational leadership (Bass, 1998; Burns, 1978; House & Howell, 1992).

A beginning attempt was recently made to explore this question within the officer cadet data set reported on here. Results show that transformational leadership, as rated by cadet subordinates at West Point, enters a regression model as an independent significant predictor of total Military Development Grades (across all four years), after personality hardiness, and followed by College Entrance Exam Scores, Social Judgement, Emotional Stability (-), Extraversion, and Traditional Values. With the inclusion of Transformational Leadership, the strength of the overall model is slightly improved. A correlational analysis reveals that transformational leadership is not significantly correlated with hardiness in this sample, although transformational leadership is moderately correlated with the hardiness facet of *commitment*. These are provocative findings that call for follow-up work. It is possible that those with the personality characteristic of hardiness are more apt to develop a transformational leadership style, but that this will occur only under appropriate environmental or organizational conditions.

Another refinement for future work would be to use a more comprehensive criterion indicator of leadership performance, one that incorporates subordinate ratings as well as peer and supervisor for a "360°" picture. And while studies such as this predicting leadership performance in the training and development environment are important, it is equally important to identify what factors are predictive of successful leadership performance beyond the training environment, as officers and leaders in the increasingly complex and demanding world of modern military operations.

References:

- Bartone, P.T. (1999). Hardiness protects against war-related stress in Army reserve forces. Consulting Psychology Journal, 51, 72-82.
- Bartone, P.T. (1998). Test-retest reliability of a short hardiness scale. Unpub. manuscript, Department of Behavioral Sciences and Leadership, U.S. Military Academy, West Point, New York.

- Bartone, P.T. (1989). Predictors of stress-related illness in city bus drivers. J. of Occupational Medicine, 31, 657-663.
- Bartone, P.T. (June, 1993). Psychosocial predictors of soldier adjustment to combat stress. Paper presented at the Third European Conference on Traumatic Stress, Bergen, Norway.
- Bartone, P.T. (July, 1995). A short hardiness scale. Paper presented at the Annual Convention of the American Psychological Society, New York.
- Bartone, P.T. & Snook, S.A. (May, 1999). Cognitive and personality factors predict leader development in U.S. Army cadets. Paper presented at the 35th International Applied Military Psychology Symposium (IAMPS), Florence, Italy.
- Bartone, P.T., Ursano, R.J., Wright, K.W. & Ingraham, L.H. (1989). The impact of a military air disaster on the health of assistance workers: A prospective study. J. of Nervous and Mental Disease, 177, 317-328.
- Bass, B. M. (1998). Transformational Leadership. Mahwah, New Jersey: Lawrence Erlbaum.
- Burns, J.M. (1978). Leadership. New York: Harper & Row.
- Celebioglu, M. (1999). The Military Program Score: A shortcoming of the cadet leader development system. Senior research project, Department of Behavioral Sciences and Leadership, United States Military Academy, West Point, New York.
- Contrada, R.J. (1989). Type A behavior, personality hardiness, and cardiovascular responses to stress. J. of Personality and Social Psychology, 57, 895-903.
- Costa, P.T., Jr. & McCrae, R.R. (1985). The NEO Personality Inventory Manual. Odessa, FL: Psychological Assessment Resources.
- Dela Rosa, M.R., Knapp, D.J., Katz, B.D., & Payne, S.C. (1997). Scoring improvements to three leadership predictors. (ARI Technical Report 1070). Alexandria, Virginia: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Evans, K.L. (1997). Estimating personality constructs from archival data. (ARI Technical Report 1063). Alexandria, Virginia: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Goleman, D. (1995). Emotional Intelligence. New York: Bantam Books.
- House, R.J. & Howell, J.M. (1992). Personality and charismatic leadership. Leadership Quarterly, 3, 81-108.
- Keen, E. (1970). Three faces of being: Toward an existential clinical psychology. New York: Appleton-Century-Croft.
- Kobasa, S.C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. J. of Personality and Social Psychology, 37, 1-11.
- Kobasa, S.C. & Maddi, S.R. (1977). Existential personality theory. In R. Corsini (Ed.), Existential Personality Theories, Itasca, IL: Peacock.
- Kobasa, S.C., Maddi, S.R., & Kahn, S. (1982) Hardiness and health: A prospective study. J. of Personality & Social Psychology, 42, 168-177.
- Maddi, S.R. (1967). The existential neurosis. J. of Abnormal Psychology, 72, 311-325.
- Maddi, S.R. & Kobasa, S.C. (1984). The Hardy Executive. Homewood, IL: Dow Jones-Irwin.
- Mael, F.A. & Schwartz, A.C. (1991). Capturing temperament constructs with objective biodata. (ARI Technical Report 939). Alexandria, Virginia: U.S. Army Research Institute for the Behavioral and Social Sciences (AD A245 119).
- Mumford, M.D., Zaccaro, S.J., Harding, F.D., Fleishman, E.A. & Reiter-Palmon, R. (1993). Cognitive & temperament predictors of executive ability: Principles for developing leadership capacity (ARI Technical Report 977). Alexandria, VA: U.S. Army Research Institute for the Behavioral & Social Sciences (AD A267 589).
- Roth, D.L., Wiebe, D.J., Fillingim, R.B. & Shay, K.A. (1989). Life events, fitness, hardiness, and health: A simultaneous analysis of proposed stress-resistance effects. J. of Personality and Social Psychology, 57, 136-142.
- Salovey, P. & Mayer, J.D. (1990). Emotional intelligence. Imagination, Cognition and Personality, 9, 185-211.
- Tremble, T.R. (1997). Longitudinal research on leadership development: Plans and status. Unpublished manuscript, Department of Behavioral Sciences & Leadership, U.S. Military Academy, West Point, New York.
- Tremble, T.R., Kane, T.D. & Stewart, S.R. (1997). A note on organizational leadership as problem solving (ARI Research Note 97-03). Alexandria, Virginia: U.S. Army Research Institute for the Behavioral and Social Sciences.
- U.S. Corps of Cadets (1995). Leadership evaluation and developmental ratings. (USCC Regulation 623-1). West Point, New York: United States Military Academy.
- Wiebe, D.J. (1991). Hardiness and stress moderation: A test of proposed mechanisms. J. of Personality and Social Psychology, 60, 89-99.